

ABSTRACT OF THE INVENTION

The present invention relates to a device assembly and tissue ablation transducer having a plurality of helical elements that can be operated out of phase to orient the acoustical energy beam forward or backward in the longitudinal direction. The transducers includes a cylindrical inner electrode, a cylindrical piezoelectric material disposed over the inner electrode, and a cylindrical outer electrode disposed over the cylindrical piezoelectric material. Spiral grooves are cut through at least the outer electrode separating the transducer into a plurality of functionally discrete helical transducer segments. The helical transducer segments can be operated independent from one another. An array of intertwined helical transducers arranged linearly along a helical axis are also contemplated.